

Benefits and Costs of Methadone Treatment: Results from a Lifetime Simulation Model

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Several studies have examined the benefits and costs of drug treatment; however, they have typically focused on the benefits and costs of a single treatment episode. Although beneficial for certain analyses, the results are limited because they implicitly treat drug abuse as an acute problem that can be treated in one episode.

We developed a Monte Carlo simulation model that incorporates the chronic nature of drug abuse. The model captures essential features of the dynamics of heroin use and methadone treatment and the associated social consequences of heroin use that generate pressure on policy makers to reduce the harm from illegal drugs. This is the first study to present estimates of the lifetime benefits and costs associated with drug use and its treatment.

Our model represents the progression of individuals from the general population aged 18 to 60 with respect to their heroin use, methadone treatment for heroin use, criminal behavior, employment, and health care use. We also present three model scenarios to evaluate how changes in treatment parameters affect model results—an increase in the probability of going to treatment, an increase in the treatment length of stay, and a scenario in which drug treatment is not available. The model provides a rich characterization of the dynamics of heroin use and captures the notion of heroin use as a chronic recurring condition.

The benefit-cost ratio of treatment from our lifetime model (37.72) exceeds the benefit-cost ratio from a single treatment episode (4.86) based on a static analysis. The magnitude of the lifetime model illustrates that treatment has a multiplicative effect that arises because treatment changes an individual's life trajectory by changing the individual's propensity to use drugs, which in turn affects future employment opportunities and the propensity to commit future crime and seek health care.

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